* Previous office action mailed on 5/14/2010 has been vacated and is replaced with the office action below due to a typographical error indicated by the applicant.

### *Response to Arguments*

1. Applicant's arguments with respect to claims 38 – 68 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 38 – 40, 47, 49, 51, 54 – 57, 59 and 65 – 67 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhu et al. (US 7,043,210 B2).

Regarding claim 38, Zhu teaches mapping (QAM mapping; Fig. 6, element 50) by a transmitting apparatus (base station; Fig. 6) groups of bits of transmission data (B0, B1, B2, B3, … BN; as shown in Fig. 6) comprising data entities of different levels of importance (packets 1 – N having different levels of importance, wherein packet 1 has the highest priority and packet N has the lowest priority; Col. 5, lines 46 – 63) to multi-level modulation symbols, wherein the bits of a respective data entity within each group

of bits is mapped to a respective hierarchical part of the respective multi-level modulation symbol (hierarchical coding and modulation scheme; Col. 5, lines 1 – 21), transmitting the multi-level modulation symbols from the transmitting apparatus (base station; Fig. 8) to a receiving apparatus (mobile station; Fig. 8), determining at the receiving apparatus (mobile terminal) for which data entities of the received data (packet 1 through packet 4 is transmitted in the progressively modulated layer to the mobile terminal, which the mobile terminal will attempt to demodulate and decode each of the associated layers; Col. 6, lines 20 – 28) feedback should be provided based on a decision which data entities are required and which data entities are optional to satisfy a quality of service criterion, and based on the hierarchical parts of the respective multi-level modulation symbols that correspond to data entities required to satisfy the QoS criterion (the mobile terminal determines that the two most significant bits which are those associated with packet 1 and 2 were properly received and those for the last significant bits associated with packets 3 and 4 were not properly received; Col. 6, lines 28 – 32), and transmitting feedback for those data entities for which it has been determined that feedback should be provided from the receiving apparatus to the transmitting apparatus to thereby satisfy said QoS requirement (the mobile terminal signals the base station that the data for packets 3 and 4 were not properly received and a feedback processing function 66 located at the base station effectively schedules packets 3 and 4 for retransmission to the mobile terminal; Col. 6, lines 33 – 52).

Regarding claim 39, Zhu teaches wherein the levels of importance are predetermined or conveyed during setup of the transmission (packets 1 through N

whereas packet 1 having the highest priority and packet N having the lowest priority is scheduled for transmission; Col. 5, lines 46 – 49).

Regarding claim 40, Zhu teaches wherein the levels of importance are dynamically varied during transmission and signaled from the transmitter (base station) to the receiver (mobile terminal) (a feedback processing function 66 at the base station effectively schedules packets 3 and 4 so that they have the next highest priority, thus dynamically varying the levels of importance during transmission; Col. 6, lines 28 – 52).

Regarding claim 41, Zhu teaches wherein the data entities of different levels of importance are assigned hierarchical transmission modes in multi-level modulation formats (hierarchical coding and modulation scheme; Col. 5, lines 1 – 21).

Regarding claim 47, Zhu teaches wherein the feedback signifies positive or negative acknowledgements of received data packets (ACK or NAK; Col. 6, lines 44 – 52).

Regarding claim 49, Zhu teaches wherein an adjustment of the power ratio between the data entities of different importance levels is effected (a power amplifier (not shown) will amplify the modulated carrier signal to a level appropriate for transmission; Col. 4, lines 18 – 24).

Regarding claim 51, Zhu teaches wherein for data entities of different importance levels, different modulation schemes are selected (QPSK modulation is selected for highest priority and 16QAM for lowest priority; Col. 5, lines 1 – 21).

Regarding claim 54, Zhu teaches all the limitations of claim 54 as shown above in claim 38 including a receiving apparatus (mobile terminal; Fig. 7) for use in a

communication system comprising: a receiver section (antenna; Fig. 3, element 40) that receives multi-level modulation symbols, a de-mapping section (demodulation; Fig. 7, element 54) that de-maps the multi-level modulation symbols to bits of a respective data entity within each group of bits (B0 – BN), wherein the de-mapping section is adapted to de-map respective hierarchical parts of a respective multi-level modulation symbol to bits of a respective data entity within each group of bits (Col. 5, line 64 through Col. 6, line 43).

Regarding claim 52, Zhu teaches wherein for data entities of different importance levels uniform and non-uniform signal constellations are selected (4 bits of data may be mapped into 16 positions in a constellation in a uniform manner as shown in Fig. 4; Col. 5, lines 1 – 21).

Regarding claim 53, Zhu teaches wherein the signal constellation (Fig. 4) employed for modulation is selected such that a desired error resilience of the data entities is translated into the arrangement of the signal constellation points (the bits of data may be mapped in a constellation; Col. 5, lines 1 – 21).

Regarding claim 55, Zhu teaches a storage section (inherently present but not shown) that stores criteria which define the levels of importance or that stores the levels of importance (highest priority Vs. lowest priority bits of data), which are signaled from the transmitting apparatus (the mobile terminal is capable recognizing the two most significant bits which have higher priority than others) (Col. 5, line 64 through Col 6, line 43).

Regarding claim 56, the claim is interpreted and rejected for the same reason as set forth in claim 38.

Regarding claim 57, the claim is interpreted and rejected for the same reason as set forth in claim 40.

Regarding claim 59, Zhu teaches a communication system comprising (a) a transmitting apparatus (base station; Fig. 7), and (b) a receiving apparatus (mobile terminal; Fig. 8) according to claim 54.

Regarding claim 65, Zhu teaches a classifying section that determines which data entities are required and/or are optional to satisfy a service requirement (the baseband processor 34 in cooperation with the control system 32 determines which data entities are required; Col. 4, lines 25 – 52).

Regarding claim 66, the claim is interpreted and rejected for the same reason as set forth in claim 55.

Regarding claim 67, Zhu teaches wherein the transmitting apparatus comprises a variation section (scheduler within a control system 20) that dynamically varies the criteria defining the levels of importance, or the levels of importance (the data for the packets therebetween are progressively layered for relative importance), according to at least one of the transmission parameters including transmission power, coding gain, modulation, data rate and error probability (the resultant data is modulated by modulation function 52) (Col. 5, lines 22 – 63).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 42 – 46, 48, 58 and 60 – 62, 64 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of the admitted prior art (hereinafter APA).

Regarding claim 42, Zhu does not specifically disclose wherein the communication system is a multi-cast transmission system comprising at least one data transmitting apparatus and multiple data receiving apparatuses. In an analogous art, the APA teaches wherein the communication system is a multi-cast transmission system comprising at least one data transmitting apparatus (multicast transmitter; Fig. 1) and multiple data receiving apparatuses (multicast receiver 1 - 3; Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the multi-cast transmission system of the admitted prior art to the system of Zhu in order to effectively convey data to a plurality of receivers simultaneously.

Regarding claim 43, the APA teaches wherein the feedback is transmitted at least from one designated multicast receiving apparatus (feedback can be provided from the multicast receivers to the multicast transmitter; Page 1, Paragraph 0003).

Regarding claim 44, the APA teaches wherein the communication system is a wireless mobile communication system having a plurality of mobile receiving

apparatuses with different qualities of the received data (the quality of the received signal is generally not identical for all receivers; Page 1, Paragraph 0003).

Regarding claim 45, the combination of Zhu and the APA, teaches wherein the feedback (Feedback 1 – 3; the APA: Fig. 1) is transmitted by the multicast receiving apparatus only (Multicast Receiver 1 – 3; the APA: Fig. 1), if a QoS criterion for at least one data entity of one level of importance has not been met (the feedback is transmitted from the mobile terminal to the base station only if the received packets was not properly received; Zhu: Col. 6, lines 20 – 43).

Regarding claim 46, the APA teaches wherein the data is transmitted using MPEG data compression, comprising frames or pictures having different levels of importance (Page 2, Paragraph 0002).

Regarding claim 48, the APA teaches wherein the feedback requests control of at least one of the transmission parameters including transmission power, coding gain, modulation, data rate and error probability (Page 1, Paragraph 0005).

Regarding claim 60, the claim is interpreted and rejected for the same reason as set forth in claim 42.

Regarding claim 61, the claim is interpreted and rejected for the same reason as set forth in claim 44.

Regarding claim 62, the claim is interpreted and rejected for the same reason as set forth in claim 45.

Regarding claims 58, 64 and 68, the claims are interpreted and rejected for the same reason as set forth in claim 46.

6. Claims 50 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of Baum et al. (US 6,385,462 B1).

Regarding claim 50, Zhu teaches wherein the required data entities will be transmitted with increased power (power amplifier amplifies the modulated carrier signal to a level appropriate for transmission; Col. 4, lines 18 – 24).

However, Zhu does not specifically disclose that the optional data entities will be transmitted with decreased power, such that the combined transmitted power remains unchanged. In an analogous art, Baum teaches that the optional data entities will be transmitted with decreased power (power selection unit 114 selects the transmit power to be the smallest possible transmit power based on the target signal quality of one of the planned links is less than or equal to the minimum desired signal quality), such that the combined transmit power (minimum and maximum desired signal qualities) remains unchanged (the transmit power remains within the dynamic range) (Col. 4, lines 4 – 62). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the technique of Baum to the system of Zhu in order to provide an efficient implementation to take advantage of the imperfections of the power control to increase the system capacity.

Regarding claim 63, the claim is interpreted and rejected for the same reason as set forth in claim 50.

## ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to UN C. CHO whose telephone number is (571)272-7919. The examiner can normally be reached on 9:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/UN C. CHO/
Examiner, Art Unit 2617